Ergonomics

In Action

Booklet IV

Health Care Management

Health Care Management Overview

There is no specific requirement for health care providers to perform medical examinations under the ergonomics program. However, the early recognition, evaluation, treatment, and follow-up of signs and symptoms of work-related musculoskeletal disorders (WMSDs) is essential in preventing disabilities in already affected individuals, and in lowering the risk of work-related disorders in other personnel.

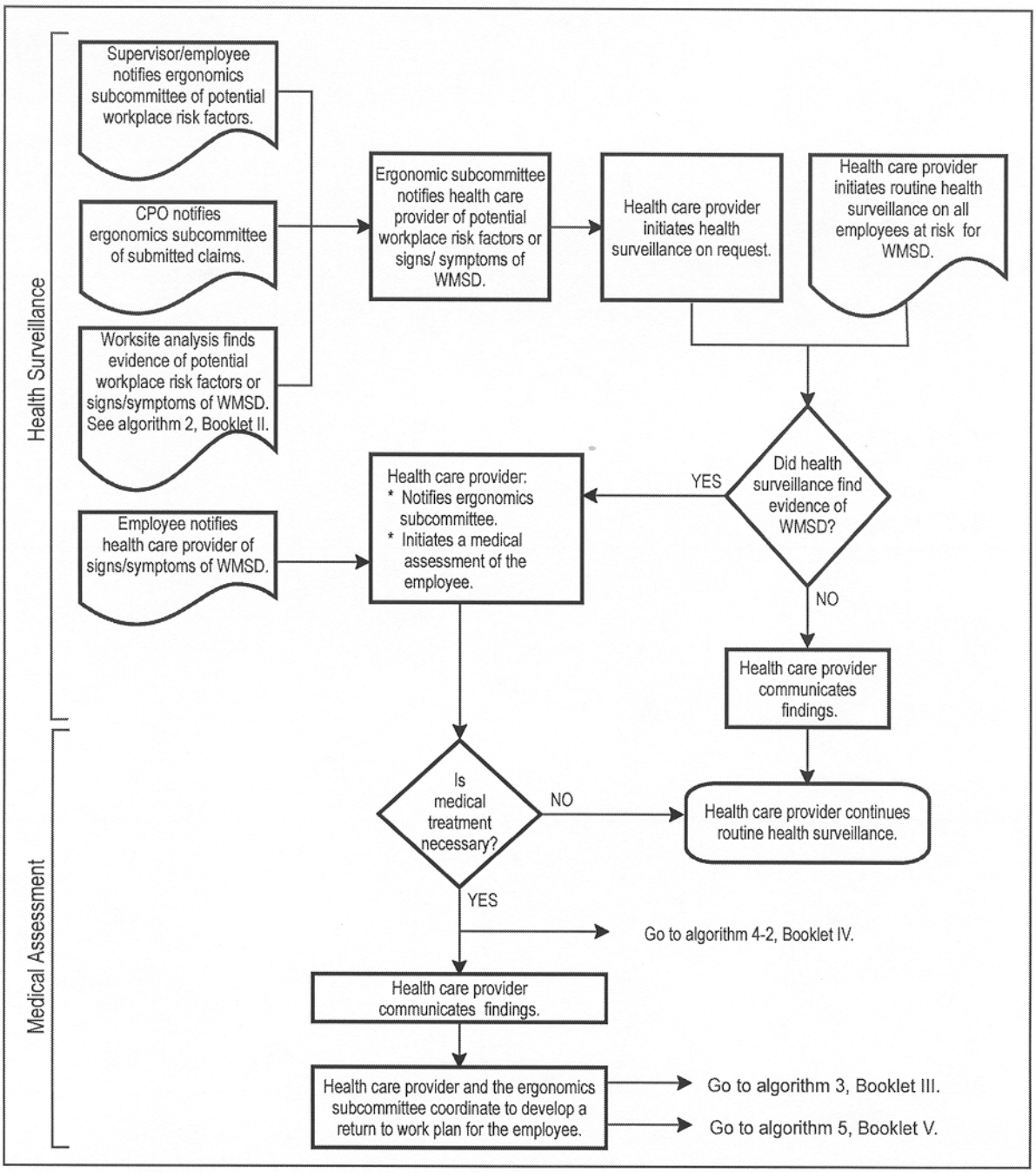
Conduct Health Surveillance	• There are five entry points to health surveillance.
	  ◦ The supervisor or employee can notify the ergonomics subcommittee of potential workplace risk factors.
	  ◦ The Civilian Personnel Officer (CPO) can notify the ergonomics subcommittee of a claim submitted by an employee.
	  ◦ Through passive or active surveillance, the ergonomics subcommittee can find evidence of a potential worksite risk factor or signs/symptoms of WMSD. See Algorithm 2 in Booklet II for more information on worksite analysis.
	  ◦ Employees may directly consult with the health care provider at the first signs or symptoms of WMSDs.
	  ◦ The health care provider can find evidence of WMSDs during routine health surveillance.
	• The health care provider and ergonomics subcommittee notify each other when potential workplace risk factors or evidence of WMSDs are identified. Subsequently, the health care provider can—
	  ◦ Provide timely access to health surveillance, and an immediate response to signs and symptoms as they occur in an employee or groups of employees within a particular job series or at a particular worksite.
	  ◦ Determine whether there is evidence of WMSDs.
	  ▪ If *no*, the health care provider files appropriate reports; communicates the findings with the ergonomics subcommittee, the CPO, the worker's supervisor, and the worker; and continues routine health surveillance.
	  ▪ If *yes*, the health care provider notifies the ergonomics subcommittee, and initiates a medical assessment of the employee.

Conduct Medical Assessment and Treatment	The health care provider performs a medical assessment of the worker.
	• A questionnaire establishes a history of injury.
	• A physical examination determines if there are signs and symptoms of WMSDs present in the worker, and whether the condition requires medical treatment.
	  ◦ If *yes*, the health care provider begins appropriate medical treatment as defined by current standards of medical practice. The medical treatment process is outlined in Algorithm 4-2 of Booklet IV.
	  ◦ If *no*, the health care provider files appropriate reports; communicates the findings with the ergonomics subcommittee, the CPO, the worker's supervisor, and the worker; and continues routine health surveillance.

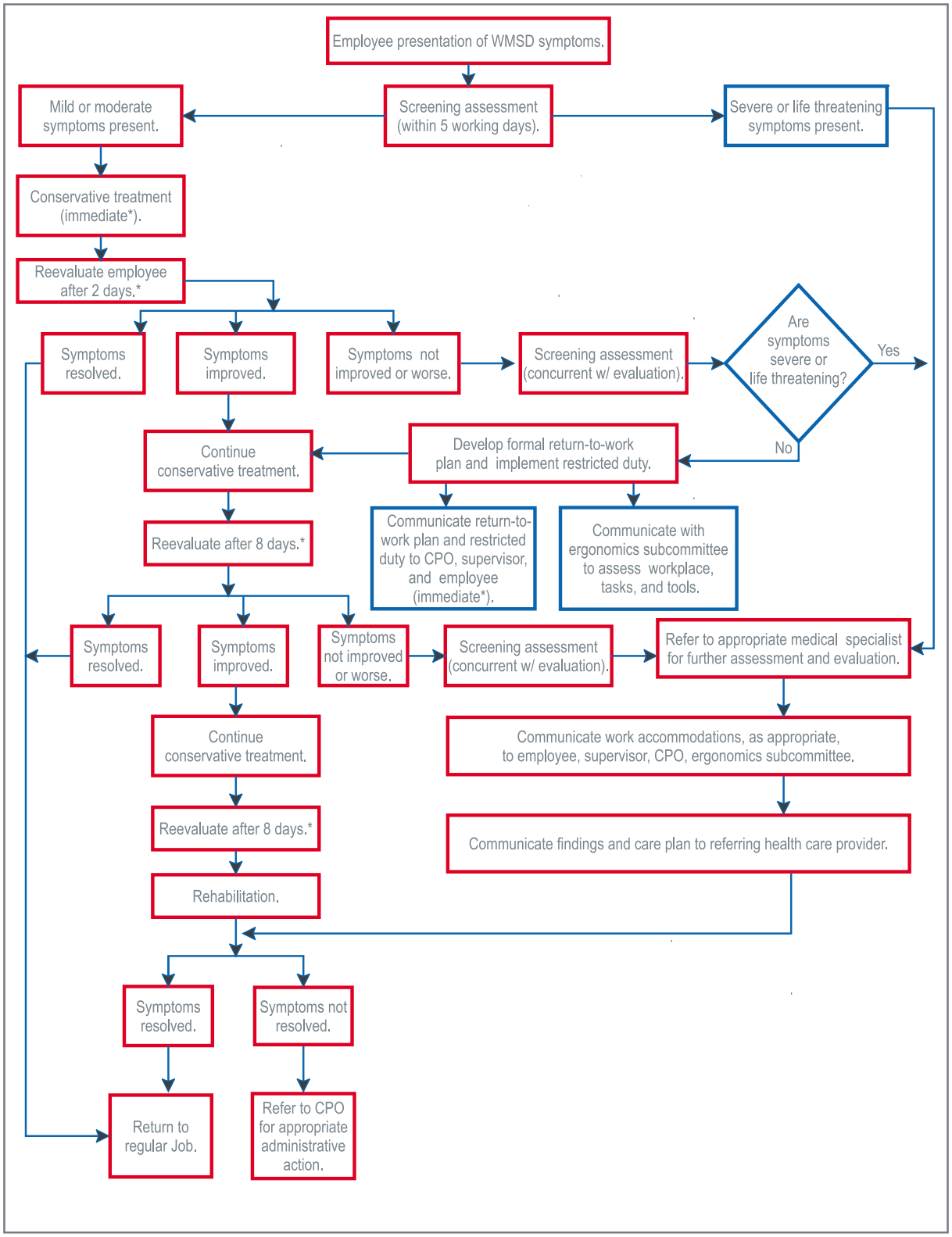
Communicate Findings	• As stated above, the health care provider communicates the findings of health surveillance or a medical assessment to the ergonomics subcommittee, the CPO, the worker's supervisor, and the worker. This communication can be verbal or in written form. • If the health care provider is an outside practitioner, however, he or she must communicate in writing with the Army Medical Treatment Facility (MTF) to ensure that the employee's medical records are up-to-date with his or her condition.

Develop a Return-to-Work Plan	• When the physical limitations caused by a WMSD are not totally restrictive and allow the worker to return to work, the health care provider defines activity limitations and acceptable exposure limits to workplace risk factors.
	• The health care provider coordinates these limitations and exposure limits with the ergonomics subcommittee, and—
	  ◦ Participates in an assessment of the worksite, tasks, and assignments available to the employee.
	  ◦ Identifies appropriate tasks, with the assistance of the ergonomics subcommittee, for the employee, and recommends duty assignments to management that will not aggravate the employee's condition.
	  ◦ Identifies necessary changes to the employee's original worksite, workstation, or task that will reduce or eliminate the exposure to workplace risk factors. See Algorithm 3 in Booklet III for more information on the hazard prevention and control process.
	• The ergonomics subcommittee initiates education and training, including job-specific training and an overview of interventions being implemented. See Algorithm 5 in Booklet V.

Algorithm 4-1. Health Care Management



Algorithm 4-2. Medical Treatment



* Re-evaluation time limits may vary by individual installation policies and personnel limitations.

Source: OSHA Ergonomics Guidelines for Meatpacking.

Contents

BOOKLET IV

Booklet IV details the information necessary to complete an installation protocol and ensure a successful installation health care management program. Wherever possible, the emphasis should be on prevention. In addition, this booklet defines some common WMSDs and includes supplemental materials to aide health care providers in the identification, evaluation, and treatment of signs and symptoms of WMSDs.

PART I: GENERAL

The Role of Health Care Management in the Ergonomics Program Health care management is an important part of an installation ergonomics program. The early identification, evaluation, and treatment of signs and symptoms of work-related musculoskeletal disorders (WMSDs) helps prevent disability in affected individuals. It also triggers administrative and engineering interventions that can lower the risk of these work-related disorders in other personnel involved in similar work. In keeping with the proactive orientation of the program, health care management should be geared toward preventing WMSDs.

Consult Army Regulation (AR) 40-5 for specific details on medical surveillance under the preventive medicine program.

Medical Surveillance Under the Preventive Medicine Program Medical surveillance is defined as the systematic and periodic collection and analysis of health data on groups of employees for the purpose of early detection of the increased risk, or actual presence, of negative job-health interactions. Under the Army's Preventive Medicine Program, occupational health (OH) clinics and medical treatment facilities (MTFs) are required to provide medical surveillance to all employees. Exams include, but may not be limited to—

- New hire, job transfer, and periodic examinations for all military personnel and civilian employees potentially exposed to health hazards in the work environment.
- Termination examinations for employees ending specific assignments or employment, as needed.
- Special military exams.
- Special civilian exams.
- Health maintenance examinations.

Written Protocol

Health care personnel are required to develop a written protocol for the early recognition, evaluation, treatment, and follow-up of WMSDs. The protocol includes communication with supervisors and military and civilian personnel to identify worksite problems and implement recommendations. Health care personnel should tailor the protocol to their specific installation and provide it to the ergonomics subcommittee for initial review. Health care personnel and the ergonomics subcommittee should coordinate to review and update the protocol annually.

Medical Examinations

There is no specific requirement for health care personnel to perform medical examinations under the ergonomics program. However, it is recommended that the installation protocol incorporate provisions of an initial medical evaluation. This evaluation should—

- Be given after the offer of employment has been made and must be given to all new or transferred employees rather than selected employees.
- Include a detailed medical and occupational history and a physical examination.

A standardized questionnaire is a useful tool. It can help gather important information, including:

- Date of onset of injury or illness, symptoms, and previous treatments.
- Systemic conditions, trauma, and prior WMSDs.
- Job conditions, tasks, and recreational activities that exacerbate the condition.
- Military occupational specialty (MOS), job title or series, and number of years and months at that job.
- Prior work history.
- A detailed description of current job tasks and the amount of time normally spent on each task.
- A detailed description of symptoms to include location, characteristics of pain (such as burning, sharp, dull, pins and needles), severity, onset, duration, and exacerbating and relieving factors.

- Lost time or limited duty due to symptoms
- Prior evaluation, diagnosis, and treatment of symptoms.
- Other existing medical conditions and history of trauma and surgery.
- Activities and hobbies outside of work.
- Current medications.

A physical examination should only be given *after* an offer of employment has been made, and must be given to all new or transferred employees rather than selected employees. The Americans with Disabilities Act (1991) restricts the scope of the physical as well. Physicals can only be used to determine if the individual can perform the specific task for which he/she was hired. In addition, no questions involving general health, past injuries, mental or physical conditions, addictions, or other personal questions may be asked.

A credentialed health care provider should perform the physical examination, which should include, at a minimum:

- Appearance (swelling, muscle atrophy, redness, skin discoloration).
- Range of motion and muscle strength.
- Neurologic assessment (motor, sensory, reflexes).
- Vascular assessment (pulses, capillary refill).
- Evaluation for pain and tenderness.

The health care provider should perform additional testing if the patient's history or physical examination indicates the need to do so. The additional tests may include, but may not be limited to, radiographic procedures, laboratory tests, and electrical studies. If the medical assessment indicates the condition may be work-related, the health care provider should also notify and assist the ergonomics subcommittee in performing a complete job analysis.

In addition, the protocol should allow for periodic health surveillance every 2 to 3 years for workers assigned to high-risk jobs.

Early Recognition and Reporting

Early recognition and health care management of WMSDs are essential to reduce the impact of injury on both personnel and the employer. Timely access to medical care is critical to the successful management of WMSDs. The worker should be evaluated at the earliest possible date. Common symptoms of these work-related injuries and illnesses can include, but are not necessarily limited to, pain, tingling, numbness, stiffness, and weakness in the neck, shoulders, arms, hands, back, and legs. Other symptoms include headaches, visual fatigue, and increased errors.

In the glossary:
✓ Tinel's sign
✓ Phalen's test

Systematic Evaluation and Referral

Detailed guidelines for reporting and documenting job-related injuries or illnesses, like WMSDs, are presented in AR 690-800, Chapter 810, CA 810, "Injury Compensation for Federal Employees," 1994.

In general, if an employee experiences signs or symptoms of a WMSD, he or she should immediately notify the supervisor.

- If the injury requires emergency treatment, the supervisor should personally escort the employee to the installation MTF. The supervisor should encourage civilian personnel with a suspected WMSD to seek evaluation and treatment in an Army MTF where possible.

- If the employee chooses not to be treated by an Army physician, the supervisor should provide Department of Labor (DOL) Forms CA-16 (Authorization for Examination and/or Treatment) and CA-17 (Duty Status Report) to the employee. The employee's personal physician should complete these forms and return them to the supervisor, who will retain a copy of each and forward the originals to the Civilian Personnel Advisory Center (CPAC).

In all instances of injury, the employee should complete DOL Form CA-1 (Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation), and submit it to his or her supervisor within 2 days of the injury or the onset of signs or symptoms of a WMSD. The supervisor submits the CA-1 to the CPAC for further administration.

Active duty soldiers with a suspected WMSD should be referred to an Army MTF. Army Reserve Component soldiers and Army National Guard members with a suspected Army-duty WMSD should also be referred to an Army MTF. Supervisors should make certain that all symptomatic soldiers report for a medical evaluation in a timely manner.

For all personnel, whether they be a civilian employee or a soldier, early symptom identification and treatment is crucial to preventing a more serious disorder. *Supervisors may not place disincentives as an impediment to personnel reporting WMSDs.*

Conservative Treatment

Health care personnel should initiate appropriate treatment and rehabilitation as defined by the current standards of medical practice. It is important to note that although there are a variety of treatments available for WMSDs, these therapies have not been validated by epidemiological studies. Therefore, try conservative therapy before invasive treatment.

The Army Civilian Injury Compensation Program is based on the Federal Employees' Compensation Act (FECA). FECA provides monetary compensation, death benefits, medical care and assistance, vocational rehabilitation, and retention rights to all federal employees who sustain disabling injuries, including occupational disease or illness (e.g., WMSDs), as a result of their employment. The Office of Workers' Compensation Programs (OWCP) is an office within the DOL that administers FECA. The Injury Compensation Program Administrator (ICPA) in the CPAC, formerly the Civilian Personnel Office, acts as the liaison between supervisors, employees, and the OWCP.

Priorities for care and authorization for treatment of all personnel can be found in AR 40-5 and AR 40-3.

In the glossary:

- ✓ screening assessment
- ✓ occupational disease and injury

See Booklet III for guidance on medical appliances.

Health care personnel should also observe the following guidelines when treating WMSDs:

- Prescribe splints and braces carefully and clearly.
- In most cases, do not recommend wrist splints for wear during work. The worker often struggles against the splint to perform the work, which can increase tissue stress and inflammation, exacerbating the condition. Splints may also cause the worker to assume very awkward postures, producing stress on other joints such as the elbow and shoulder. In general, it is better to increase the frequency (not the length) of rest breaks, and to wear the splint during each rest period.
- Do not recommend wrist splints and back braces for use as preventive measures.

Communication With the Supervisor

The health care provider is responsible for communicating findings and a treatment plan with the supervisor. This plan should be clearly written, and include—

- Results of the assessment.
- The treatment plan and specific work restrictions.
- Duration of, or a timetable for, restrictions.
- A list of necessary modifications.
- Reassignment recommendations.

Conservative Return to Work

Job assignment of the injured worker should ensure that the worker is not placed back in the same job that caused the injury unless the ergonomic stressors are alleviated.

Appendix B contains a sample restricted duty worksheet.

See Booklet III for details on hazard prevention and control.

When the physical limitations caused by a WMSD are not totally restrictive and allow the worker to return to work and perform less than his/her normal work requirements, the ergonomics subcommittee evaluates the workplace and determines the risks and capacities required to perform the job. The subcommittee then coordinates with the health care provider(s), who recommends duty assignments that will not aggravate a patient's condition. These assignments will be based on the subcommittee's input and the health care provider's professional medical judgment. Such "modified-," "restricted-," or "light-duty" assignments should allow injured muscle-tendon groups time to rest and thus assist in the healing process.

In the glossary:
✓ modified assignments
✓ restricted assignments
✓ light-duty assignments

In order for a return-to-work plan to be successful, it must identify specific work restrictions, necessary accommodations, and job assignment recommendations. In addition, the ergonomics subcommittee must verify that

job modifications or the temporary assignment reduces or eliminates the workplace risk factor(s) that originally caused the WMSD. Job modifications may include, but need not be limited to—

- Reducing exposure time.
- Decreasing work pace.
- Redesigning a job or process.
- Eliminating some elements of the work.
- Providing handling aids.
- Retraining the injured worker.

Health care providers should also advise affected workers about the potential risk of continuing hobbies, recreational activities, or other personal habits that may adversely affect their condition.

Complete removal from the work environment is the last resort and should be avoided if possible. Health care personnel should coordinate modified- or restricted-duty work assignments with trained ergonomics personnel.

Follow-ups

Health care personnel should perform regular follow-ups on patients being treated for WMSDs. The follow-ups should be performed in accordance with standard medical practice to monitor the effectiveness of therapy and worksite interventions.

Refer to Booklet II for information on worksite analysis.

Worksite Analysis Referrals

Health care personnel who are treating a patient with a suspected WMSD should request a worksite analysis for the patient through the ergonomics subcommittee. An action team, together with health care personnel, should conduct the worksite evaluation.

If the disorder is not work-related, the ergonomics subcommittee should still complete a worksite analysis if the health care provider thinks there are any risk factors which would aggravate, complicate, or delay the healing process. If so, the workstation or task may require a redesign to accommodate the employee's condition.

In addition, health care providers should be familiar with employee jobs and job tasks. With specific knowledge of the physical demands involved in various jobs and the physical capabilities or limitations of employees, health care providers can—

- Specifically identify assignments for the individual worker based on his or her symptoms and treatment plan.
- Cooperate with trained ergonomics personnel to develop a list of jobs with low ergonomic risk.
- Assist the CPO and supervisors in writing job descriptions for each light-duty position. Each description may identify workplace risk factors.

In the glossary:
✓ trained ergonomics personnel

Systematic Monitoring

Refer to Booklet II for details on worksite analysis.

Systematic monitoring of the work environment should be performed as a proactive measure to prevent WMSDs. Health care personnel, in cooperation with members of the ergonomics subcommittee, should—

- Conduct periodic, systematic worksite walk-through evaluations to remain knowledgeable about operations and work practices. A minimum of once a year is suggested.

- Provide written documentation of the walk-through evaluation. Documentation should include date, area(s) visited, workplace risk factors identified, and actions taken (if any). If prioritized follow-up is needed, it should also be documented.

- Maintain baseline and periodic health assessment results in personnel medical records. Give attention to any changes that could indicate a WMSD.

Routine worksite and health surveillance may be necessary for—

- Specific jobs where a high incidence of WMSDs has been demonstrated.

- Specific jobs that have been identified as high risk, based on systematic active surveillance and detailed analysis.

Recordkeeping and Reporting

Refer to AR 40-66 for guidelines on the preparation and use of Army medical records.

Health care management requires following appropriate recordkeeping and reporting procedures. Documentation of all data must be maintained in confidential files, though the findings of the medical assessment should be accessible to the ergonomics subcommittee and all other personnel directly related to the case (e.g., the worker; occupational health (OH), safety, and health care personnel; and personnel handling workers' compensation claims, such as the CPAC), per AR 40-66, chapters 2 and 5.

OH, safety, and health care personnel should use the following forms to document WMSDs and perform passive surveillance:

- Log of Federal Occupational Injuries and Illnesses.
- DOL Form CA-2 (all WMSDs except back injuries).
- DOL Forms CA-1, CA-16, and CA-17 (Duty Status Report) (back injuries).
- Standard Form (SF) 600 (Chronological Record of Medical Care) in the medical record.
- DA Form 3075 (Occupational Health Daily Log).
- DA Form 285 (U.S. Army Accident Report) and DA Form 285-AB-R (U.S. Army Abbreviated Ground Accident Report) for reporting military occupational illnesses and injuries.

PART II: HEALTH ASPECTS OF THE MOST COMMON WORK-RELATED MUSCULOSKELETAL DISORDERS

Work-Related Musculoskeletal Disorders

The Health Hazard Information Module (HHIM) software, as it relates to ergonomics issues, is currently under development. Consult with an Army MTF or local industrial hygiene office for more information.

In recent years, the number of WMSDs due to ergonomic hazards has substantially increased. In fact, WMSDs account for nearly half of the occupational illnesses reported in the annual Bureau of Labor Statistics survey, and an increasingly large percentage of annual workers' compensation claims. WMSDs are a significant problem for the Army, as the costs associated with workers' compensation continue to escalate. Accordingly, Army health care personnel need to be fully trained in the prevention, recognition, and treatment of these occupational illnesses.

WMSDs are defined as a class of neuromuscular disorders involving damage to muscles, tendons, tendon sheaths, and related bones, muscles, and nerves. WMSDs result from the cumulative effect of repeated traumas associated with specific workplace risk factors.

Microtraumas are small, limited areas of tissue damage. Cumulative trauma occurs when rest or overnight sleep fails to completely heal the microtrauma and residual trauma carries over to the next day, adding to the total system trauma. Prolonged exposure to associated workplace risk factors can eventually lead to permanent damage and a debilitating condition.

Signs and symptoms of WMSDs vary according to the type of injury/illness but often include:

- Pain that does not cease overnight.
- Numbness and tingling.
- Decreased joint motion/mobility and decreased strength.
- Fatigue.

In the glossary:
✓ microtrauma
✓ residual trauma

Common WMSDs

Keep in mind, WMSDs are not diagnoses**;** they are work-related disorders with similar characteristics. Common WMSDs include:

- **Carpal tunnel syndrome.** This most common WMSD can lead to permanent disability if not detected early and treated properly. Appendix C provides additional information on the causes, physiology, symptoms, diagnoses, treatment, and prevention of carpal tunnel syndrome (CTS).

- **Low back pain.** Currently, many medical professionals believe this condition can be caused by repeated bending, lifting, and twisting of the lower back, as well as sitting for long periods, standing on hard surfaces, and experiencing vibration over a long period of time — all of which result in cumulative microtrauma. An aggravating event — even one that may seem minor, such as a slip, trip, fall, or awkward lift — often causes an acute episode to occur. The episode can occur because a cumulative trauma has reduced the tissue's ability to handle the physiologic stress of the aggravating event.

- **Tendonitis (also Tendinitis).** This condition is an irritation (inflammation) of a tendon resulting from repeated force or stress on that muscle/tendon group.

- **Lateral epicondylitis (tennis elbow).** This condition is an irritation (inflammation) of the tendons attached on the outside of the elbow caused by activities that have jerky throwing motions or impact (e.g., turning a screw driver).

- **Medial epicondylitis (golfer's elbow).** This condition is an irritation (inflammation) of the tendon attachments on the inside of the elbow resulting from activities that require repeated or forceful rotation of the forearm and bending of the wrist at the same time.

- **Tenosynovitis.** Tenosynovitis is an irritation (inflammation) of the tendon and the lining of the smooth sheath surrounding the tendon, resulting from repeated movement of the tendon in the sheath.

- **Synovitis.** Synovitis is an irritation (inflammation) of the inner lining of the membrane surrounding a joint or tendon.

- **Stenosing tenosynovitis of the finger.** Sometimes referred to as "trigger finger," this condition results from a tendon surface becoming irritated and rough. If the tendon sheath also becomes inflamed and presses on the tendon, a progressive constriction of the tendon can occur, resulting in a loss of free movement in that joint area. This disorder is commonly caused, for example, by repeated use of a staple gun or pair of pliers.

- **de Quervain's disease.** This "disease" is a stenosing tenosynovitis affecting the tendons on the radial side (e.g., thumb side) of the wrist. Constriction of these tendons pulls the thumb back away from the hand, causing severe pain and limited thumb movement or use.

Health Problems Associated With Video Display Terminal Use

Computers, and their accompanying video display terminals (VDTs), are required for more occupations than ever before. Over 30 million VDTs are in use throughout the United States, and the number is growing rapidly.

See Booklet II for suggestions on how to resolve workplace risk factors associated with VDTs.

Growing as rapidly as the number of VDTs are the health problems associated with prolonged VDT use. Those workers who use VDTs irregularly and discontinuously throughout the workday are generally not affected by VDT use. However, those workers who use VDTs continuously — over 4 hours per day or more than 20 hours per week — can experience VDT-related ailments and discomforts.

The health problem reported most often with prolonged VDT use is increased fatigue or the earlier onset of fatigue. Fatigue may be muscular, mental or emotional, visual, or a combination.

- Muscular fatigue is characterized by—
  - Pain.
  - Stiffness.
  - Physical discomfort.
  - WMSDs.
- Mental or emotional fatigue is characterized by—
  - Weariness.
  - Loss of concentration.
  - Irritability.
  - Dizziness.

- Visual fatigue is characterized by—
  - Eye discomfort due to frequently changing focus.
  - Eye irritation.
  - Headache.
  - Abnormal after-image.
  - Disturbed acuity.

Whether VDT workers are experiencing one or a combination of these problems, the results are the same — a loss in proficiency and productivity.

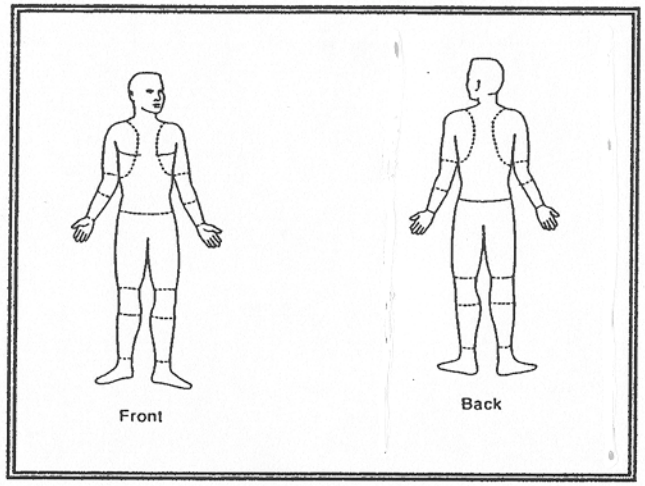
Appendix A

MEDICAL HISTORY OF ERGONOMICS SYMPTOMS

The health care provider should complete an initial medical evaluation of an employee after the offer of employment is accepted. The evaluation should include a detailed medical and occupational history and a physical examination.

A standardized questionnaire is a useful tool. This appendix contains a sample "Ergonomics Symptoms Survey" for health care providers to use in gathering important information from the employee during the initial medical evaluation.

ERGONOMICS SYMPTOMS SURVEY



Date: _____

Job Name: _____ **Hours Worked/Week:** _____

Time on this job: _____ **years** _____ **months**

Other jobs you have done in the last year (for more than 2 weeks):

If more than 2 jobs, list those you worked on the most.

Job name: _____ **Time on this job:** _____ **years** _____ **months**

Job name: _____ **Time on this job:** _____ **years** _____ **months**

Have you had any pain or discomfort during the last year? ❑ **YES** ❑ **NO**

If NO, stop here.

If YES, shade in the area(s) of the drawing (at left) that bother you the most.

Table 1. *In the following table, please check the area(s) that concerns you, and tell us what problems you experience with that area of concern. Check only those areas that cause you discomfort.*

Area of Concern	Description of Problem
❑ **Neck**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Shoulder**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Elbow/Forearm**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Hand/Wrist**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Fingers**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Upper Back**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Lower Back**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Thigh/Knee**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Lower Leg**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other
❑ **Ankle/Foot**	❑ Aching ❑ Burning ❑ Cramping ❑ Loss of Color ❑ Numbness ❑ Pain ❑ Swelling ❑ Stiffness ❑ Tingling ❑ Weakness ❑ Other

Table 2. *Please tell us about the problems you experience with each area of concern you noted in Table 1.*

Area of Concern	When did you first notice this problem?	What do you think caused this problem?	# of episodes in the *past year*?	# of episodes in the *past 7 days*?	Duration of each episode?	How would you rate this problem? *(Mark an "X" on the line.)*
Neck						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable
Shoulder						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable
Elbow/Forearm						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable
Hand/Wrist						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable
Fingers						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable

Area of Concern	When did you first notice this problem?	What do you think caused this problem?	# of episodes in the *past year*?	# of episodes in the *past 7 days*?	Duration of each episode?	How would you rate this problem? *(Mark an "X" on the line.)*
Upper Back						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable
Lower Back						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable
Thigh/Knee						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable
Lower Leg						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable
Ankle/Foot						**NOW:** None — Unbearable When it is the **WORST:** None — Unbearable

Table 3. *Please tell us about the medical treatment you've received for each area of concern explained in Table 2.*

Area of Concern	Have you had medical treatment for this problem?	Where did you receive medical treatment?	Did treatment help?	# of days lost in the *last year*	# of days on restricted/light duty in the *last year*	What do you think would improve your symptoms?
Neck	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			
Shoulder	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			
Elbow/Forearm	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			
Hand/Wrist	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			
Fingers	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			

Area of Concern	Have you had medical treatment for this problem?	Where did you receive medical treatment?	Did treatment help?	# of days lost in the *last year*	# of days on restricted/light duty in the *last year*	What do you think would improve your symptoms?
Upper Back	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			
Lower Back	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			
Thigh/Knee	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			
Lower Leg	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			
Ankle/Foot	❑ Yes ❑ No *If no, why not?* _____ _____	❑ Medical Treatment Facility ❑ OH Office/Clinic ❑ Personal Doctor ❑ Other	❑ Yes ❑ No			

Appendix B

SAMPLE RESTRICTED DUTY WORKSHEET

When physical limitations caused by a WMSD are not totally restrictive and allow the worker to return to work and perform less than his/her normal work requirements, the ergonomics subcommittee and the health care provider should coordinate to recommend duty assignments to management that will not aggravate a patient's condition.

Figure B-1 offers a sample restricted duty worksheet, compliments of the Rock Island Arsenal Health Clinic, which captures the information the health care provider and ergonomics subcommittee will need to complete a return-to-work plan for an employee.

Figure B-1

PHYSICAL ABILITY FORM
ROCK ISLAND ARSENAL HEALTH CLINIC

Rock Island, Illinois 61299-7240
(309) 782-0801

TO: _____

EMPLOYEE NAME: _____ SSN: _____

VISIT TYPE: ☐ Initial ☐ Follow-up

MEDICAL DISPOSITION

☐ Released for regular duty on (Date) _____

☐ Released for restricted duty on (Date) _____ to _____

☐ Restriction is permanent **All Permanent Restrictions MUST be supported by a clinical summary.**

RESTRICTION TYPE

UNCHECKED BOXES DO NOT APPLY

☐ Lift, push, pull up to _____ lbs. never/rarely, occasionally, frequently, continuously
☐ Bend, lift, twist, or reach never/rarely, occasionally, frequently, continuously
☐ Squat or kneel never/rarely, occasionally, frequently, continuously
☐ May not climb
☐ Stand or walk _____ mins/hr
☐ Frequent changes in position
☐ May not work above shoulder height
☐ May not bend or twist neck
☐ Sit down work only
☐ One handed duty for _____ days with ____ hand
☐ Grip or twist w/___ hand, maximum of ____ reps/hr
☐ May use ___ hand/arm, maximum of ____ reps/hr
☐ No use of vibratory tools
☐ No jamming or jolting of body
☐ No exposure to: _____
☐ No operating hazardous machinery or company vehicles
☐ Clean-dry work only
☐ Other _____

Never/Rarely 0-10% of the time
Occasionally 11-33% of the time (less than 7 reps/hr)
Frequently 34-66% of the time (13-40 reps/hr)
Continuously 67-100% of the time (1-80 reps/hr)

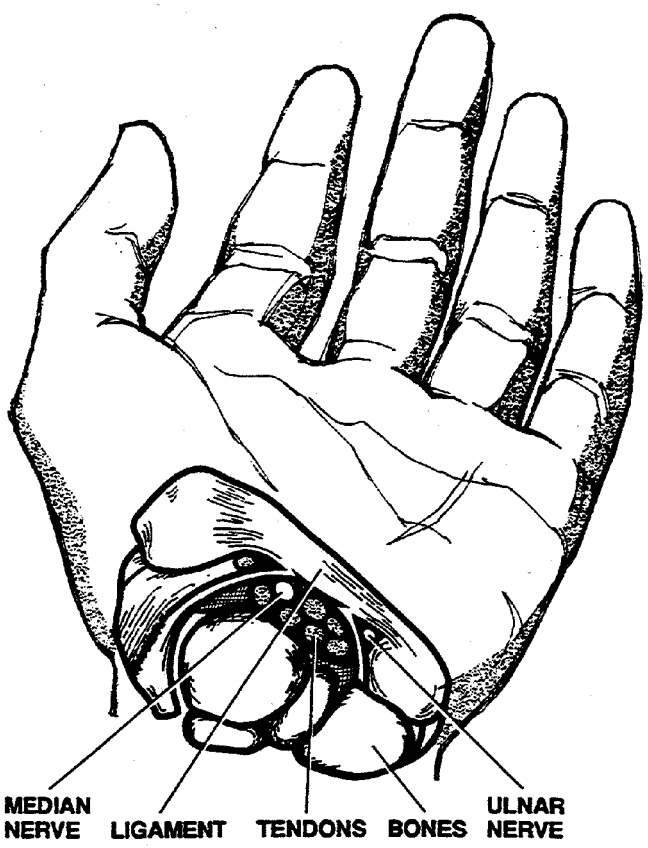
PHYSICIAN SIGNATURE _____ DATE _____

USA MEDDAC Form 261 (Rev 10 May 95) Previous editions are obsolete

What Causes Carpal Tunnel Syndrome?

CTS is caused by workplace risk factors such as—

- **Repetitive/Forced Motions.** Studies have shown that workers who perform repeated hand motions within a work cycle (especially when those motions require applying force) have increased susceptibility to CTS and other WMSDs. In 1987, researchers conducted a study to determine the relationship between high force/repetition jobs and the risk of CTS. Videotapes and electromyography were used to estimate hand force and repetition. All test subjects completed a structured interview and were given a standardized physical examination by examiners who were blind to each subject's health care history and exposure. The study results correlated the prevalence of CTS to increased repetitive motions and higher force (a 0.6 percent incidence in low force/low repetition jobs versus 5.6 percent incidence in high force/high repetition jobs). Thus, those who performed high force/high repetition jobs were 15 times more likely to develop a WMSD than those in low force/low repetition jobs. (Awkward hand postures, another risk factor for WMSDs, were not studied.)



- **Awkward Motions/Postures.** Studies have shown that exposures to awkward motions or awkward postures for prolonged periods may lead to a variety of potentially disabling injuries and disorders of the musculoskeletal tissues or peripheral nerves, or both. Awkward postures of the shoulder, elbow, wrist, and hand may result in occupational WMSDs, including CTS. Common examples of awkward posture include excessive shoulder elevation, extreme elbow postures (e.g., flexion, extension, pronation, supination), deviated wrist postures (e.g., excessive flexion, extension, radial deviation, ulnar deviation), and pinch grips. Awkward postures can be caused by poor workstation layout and equipment design. The shape of the tool handles in combination with work location and orientation may also be risk factors.

- **Prolonged Exposure to Vibrations.** Vibration is frequently reported as a cause of work-related CTDs, including CTS. Vibration exposure may result from gripping power tools, holding the controls of a powered machine, holding parts against grinding wheels, or using percussion tools, such as hammers and chisels. Vibrations may cause the worker to use excessive force to hold the vibrating tool and, consequently, may increase the risk of CTDs.

Physiology of the Carpal Tunnel

The wrist and fingers are flexed by muscles located in the forearm. The muscles are connected to the wrist and fingers by tendons that run through the wrist at the carpal tunnel. These tendons enter the wrist through a U-shaped cluster of eight carpal bones, which form the "back" and "sides" of the wrist. Across the "top" of the wrist is a tough, strong ligament that forms the arch of the carpal bones, or the roof of the tunnel.

The tendons, which allow finger and wrist flexing, are surrounded by a sheath that secretes a lubricating fluid much more slippery than motor oil. This fluid allows almost friction-free movement of the tendons. Sandwiched in this group of tendons is the median nerve, which conducts sensation from the hand to the central nervous system. This nerve, being the most sensitive structure in the wrist, is susceptible to compression.

CTS occurs when the median nerve is compressed within the carpal tunnel area. The nerve can be trapped when the tendons become irritated and inflamed. In either case, the structures within the carpal tunnel expand, and the nerve, with nowhere to go, gets squeezed within the limited confines of the carpal tunnel.

Symptoms of Carpal Tunnel Syndrome

Once the median nerve is compressed, the following CTS symptoms typically appear:

- Burning pain.
- Numbness.
- Tingling in the thumb and first two or three fingers.

These symptoms may radiate to the forearm. Sufferers frequently feel these symptoms at night, and many find performing simple tasks, such as tying their shoelaces, difficult because of weakness or numbness.

Diagnosing Carpal Tunnel Syndrome

The best method of diagnosing CTS is the nerve conduction test. The conduction rate of an electrical impulse is measured between the forearm and the hand. Nerve damage is indicated if the nerve conduction is slower than normal. A simpler method is the Phalen's test, in which the wrist is flexed for

60 seconds. If a person has CTS, the increased pressure in the carpal tunnel will cause symptoms of pain and tingling in the affected fingers. Another relatively simple method is the Tinel test, which involves tapping the median nerve on the underside of the wrist. Recent literature, however, indicates that the Tinel test has little diagnostic value.

The diagnosis of CTS can be complicated by another condition called thoracic outlet syndrome. In CTS, the median nerve is damaged in the wrist, whereas in thoracic outlet syndrome, the median nerve is compressed, and finally damaged with prolonged compression, in the cervical region. Neck, shoulder, and upper arm postures can compress nerves and blood vessels between the neck and shoulder. Symptoms are similar to those of CTS, with numbness of the fingers and the arm feeling as if it is "going to sleep." Both conditions may occur simultaneously, further complicating precise diagnosis and appropriate treatment. Refer to Appendix E for a sample diagnosis and treatment progression.

Treating Carpal Tunnel Syndrome

Specific treatment for CTS will depend on the factors that caused the disease and its stage of development. Effective treatment must include identifying and eliminating the conditions that caused the problem, not just treating the symptoms. Initial treatment may include oral anti-inflammatory medication, steroid injection, and/or splints to hold the wrist in a neutral posture at night. During the day, splint usage may or may not be prescribed. Refer to Booklet III for information on medical appliances, and follow current medical guidance when prescribing splints for use during an activity.

It is critical that a person with CTS cease to work in positions that irritate the wrist. When conservative treatment is not effective, a person with CTS may require carpal tunnel surgery. This costly procedure involves cutting the transverse ligament on the underside of the wrist to relieve the pressure within the carpal tunnel. The surgery can result in decreased hand strength.

Preventing Carpal Tunnel Syndrome

Focus prevention on—

- Reducing exposure to known risk factors such as awkward postures (deviation), repetition, mechanical compression, and vibration.

- Conditioning or training the muscles to have a greater tolerance for physiological stress, such as repetitive motion.

Control these risk factors by controlling—

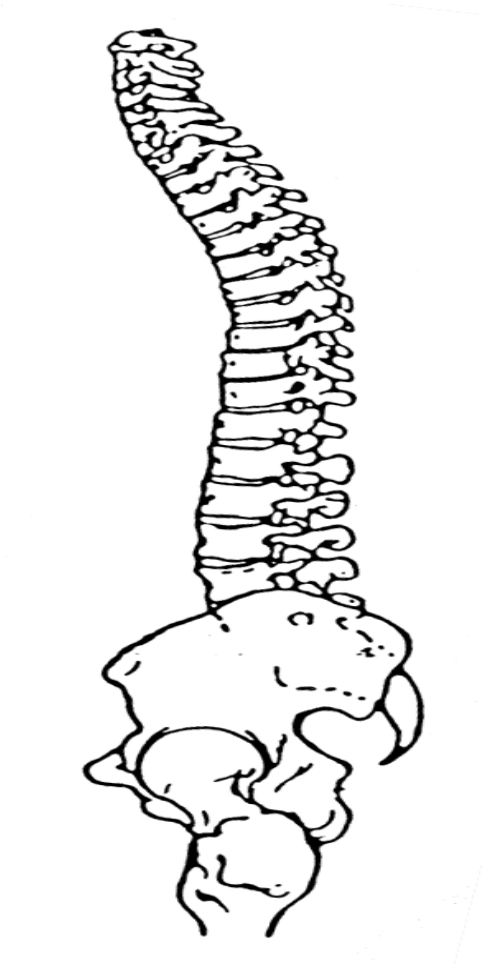
- Repetitiveness.

- Forcefulness.

What Causes Low Back Pain?

Low back pain (LBP) can be caused by a variety of workplace risk factors. Those that seem to contribute most directly to LBP include:

- **Repetitive or Awkward Motions.** Workers who perform repeated (unsupported) lifting, turning, or moving motions within a work cycle have an increased susceptibility to LBP and other WMSDs. Repetitive motions increase fatigue and muscle-tendon strain. They often prevent adequate tissue recovery from one cycle to the next. A task is considered repetitive when one fundamental cycle constitutes more than 50% of the total cycle and/or the cycle time is less than 30 seconds.



- **Awkward Postures.** Studies have shown that exposure to awkward postures for extended periods may lead to a variety of potentially disabling injuries and disorders of the musculoskeletal tissues or peripheral nerves, or both. Awkward postures that can contribute to LBP are caused by poor workstation layout and/or equipment design. Poor chair design with inadequate lower back support can also contribute to LBP, especially when performing tasks that require prolonged sitting.

- **Force.** Forceful exertions increase physiologic stress on the muscles, tendons, and joints, and can increase mechanical stress on the spine. Muscles fatigue faster as the force exerted increases. Therefore, particularly when performing bending, twisting, or lifting tasks, the following factors can contribute to LBP:
    - Object weight.
    - Load distribution (e.g., shifting or bulky loads require mor force exertion).
    - Object friction (e.g., slippery objects require more force).

Symptoms of Low Back Pain

While most LBP results from minor strains, and can be resolved with over-the-counter medicines and simple home treatment, patients may present to you with the following symptoms:

- Pain that keeps them from moving.
- Pain that runs down a leg or goes into an arm.
- Night pain that keeps them from sleeping.
- Pain that increases after a few days rest, or that does not lessen after basic home treatment.

Patients who come to your office with any of the following require immediate care and are probably showing symptoms of a greater problem.

- Difficulty controlling their bladder or bowel movement.
- Loss of sensation in the rectal area.
- Pain following a fall or impact to the back.
- Severe leg pain down both legs, weakness, tingling, numbness, or inability to move.
- Pain that is steadily increasing over several hours.
- Chills, fever, or night sweats.
- Difficulty with balance or coordination.

Diagnosing and Treating Low Back Pain

Patients with LBP should receive an initial assessment. This assessment includes a focused medical history and a physical examination. The primary purpose of this assessment is to look for "red flags," or medical history responses or physical exam findings that suggest the presence of a more serious condition, such as a fracture, tumor, or infection. Table D-1a lists the "red flags" for LBP. You should also consider the possibility that pain from visceral organs is presenting as LBP.

In the absence of "red flags," imaging studies and further testing are not usually helpful during the first 4 to 6 weeks of symptoms. Instead, you should consider treatment options depending on the duration of symptoms and the type of pain (e.g., sciatica or non-specific LBP).

Provide conservative treatment for patients who have been experiencing symptoms for less than 6 weeks.

- NSAIDs and Tylenol® are the meds of choice. Opiates/muscle relaxants give no additional proven benefit.
- Modified light activity improves outcome.
- Instruct patient in self-care and to call if pain gets worse.
- X-rays and MRIs are of proven benefit only in specific situations.
- Bed rest of more than 48 hours is of no additional proven benefit.
- Manipulation may be helpful if no sciatica.

For patients who do not improve or do not worsen, and who do not exhibit new symptoms, you may continue conservative treatment for up to 6 weeks from the initial assessment. Physical therapy may be helpful, as well as changes in NSAIDs or additional activity modification. Patients who improve with conservative treatment should gradually return to normal activity, taper medications, and enroll in a back pain prevention program.

For patients who have been experiencing symptoms for longer than 6 weeks when they arrive in your office, for those who continue to exhibit symptoms after 4 to 6 weeks of conservative treatment, or for those who are experiencing LBP among other debilitating symptoms, you should take a medical history and perform a physical (re)examination to rule out other serious problems. Use self-report questionnaires for psychosocial distress/risk factors. You should also do appropriate diagnostic tests for consult or referral. For active duty soldiers with either LBP or sciatica who do not improve after 6 weeks, assess for disposition.

Specific diagnostic tests and additional treatment will depend on the stage of development of the problem. You should also identify whether or not the pain radiates below the knee. This is a key question in guiding your choice of diagnostic tests for those patients who may benefit from surgical decompression.

Keep in mind, effective treatment must include identifying and eliminating the factors that caused the problem, not just treating the symptoms.

Preventing Low Back Pain

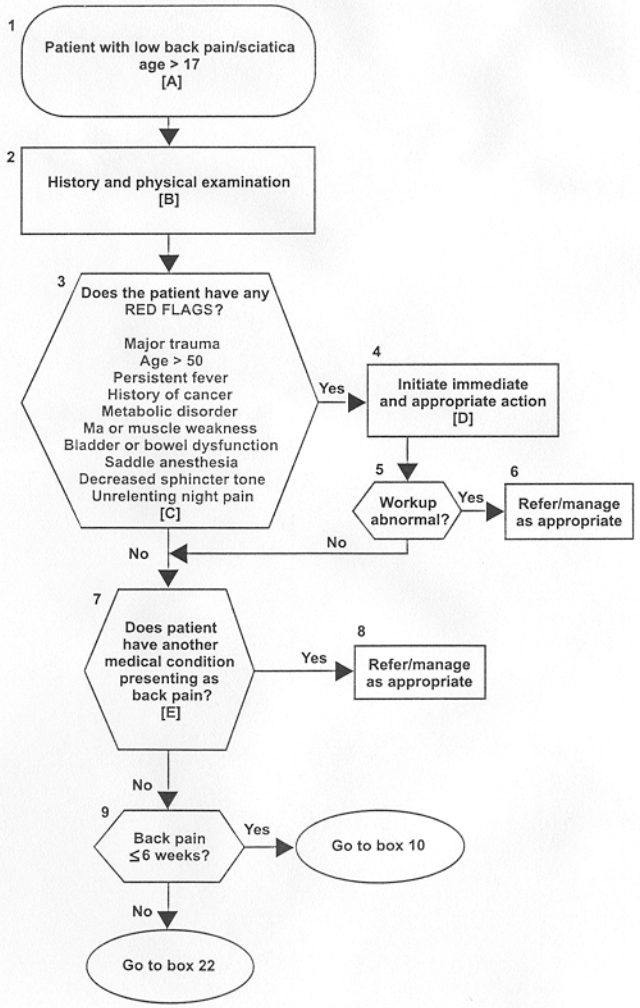
Focus prevention on—

- Reducing exposure to known risk factors such as repetition, awkward postures, or stress on muscles, tendons, joints, or the lower spine.
- Conditioning or training the muscles to have a greater tolerance for physiological stress.
- Losing weight. Extra pounds, especially around the middle, increase stress on the lower back.

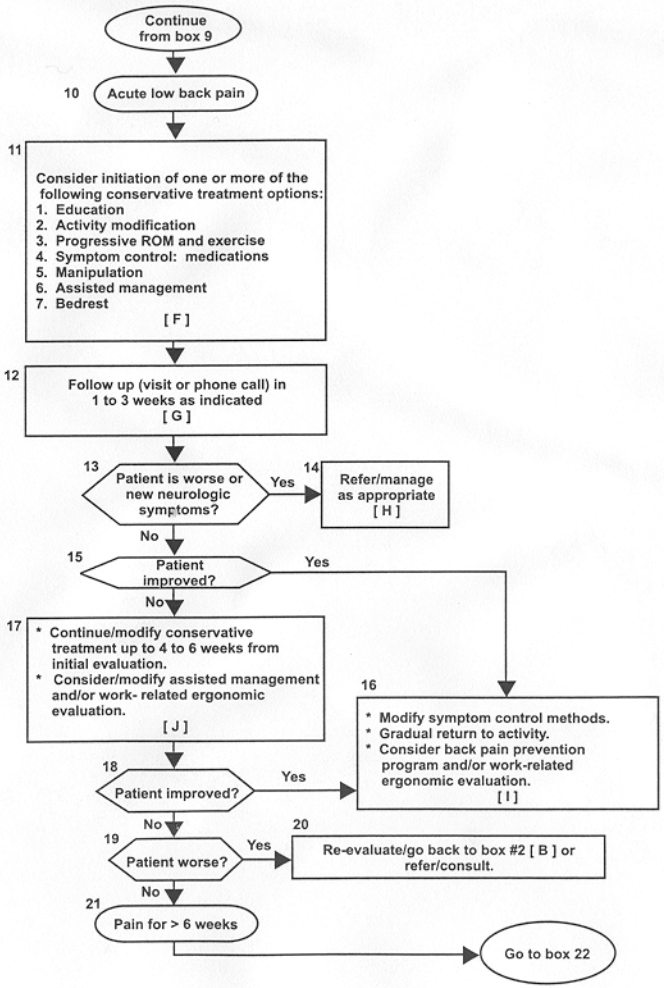
- Smoking cessation. Smoking can interfere with blood circulation to the lower back, and a constant cough can bring on a back spasm.

- Exercising daily. Walk short distances instead of driving, or climb a few flights of stairs instead of taking the elevator. Choose a sport that is easy on your back such as walking, swimming, or bicycling in an upright position.

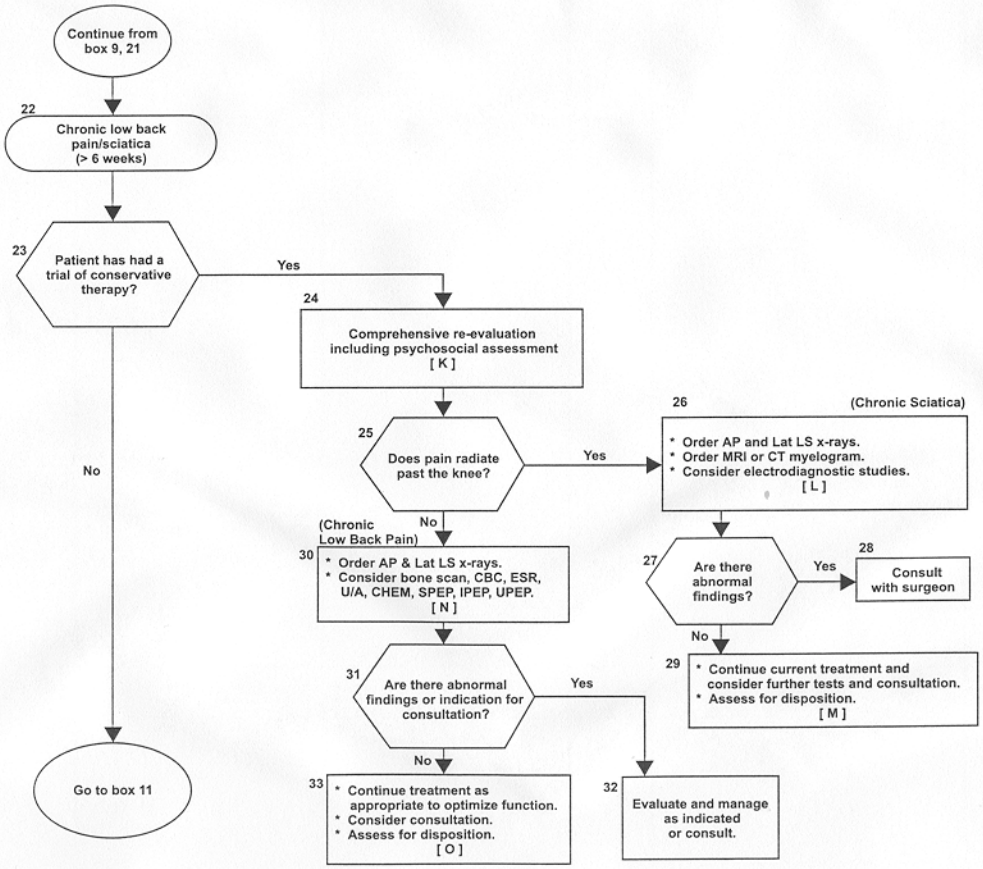
Diagnosis and Management of Low Back Pain
Part I: Screening for Other Health Problems



Diagnosis and Management of Low Back Pain
Part II: Management of Acute Low Back Pain/Sciatica in Primary Care



Diagnosis and Management of Low Back Pain
Part III: Management of Chronic Low Back Pain/Sciatica in Primary Care



June 1999

Appendix E

PROBABLE DIAGNOSIS AND TREATMENT OF COMMON WORK-RELATED MUSCULOSKELETAL DISORDERS

Early recognition and health care management of WMSDs are essential to reduce the impact of injury on both personnel and the employer. Timely access to medical care is critical to the successful management of WMSDs. The worker should be evaluated at the earliest possible date.

The health care provider should—

- Initiate appropriate treatment and rehabilitation as defined by the current standards of medical practice.

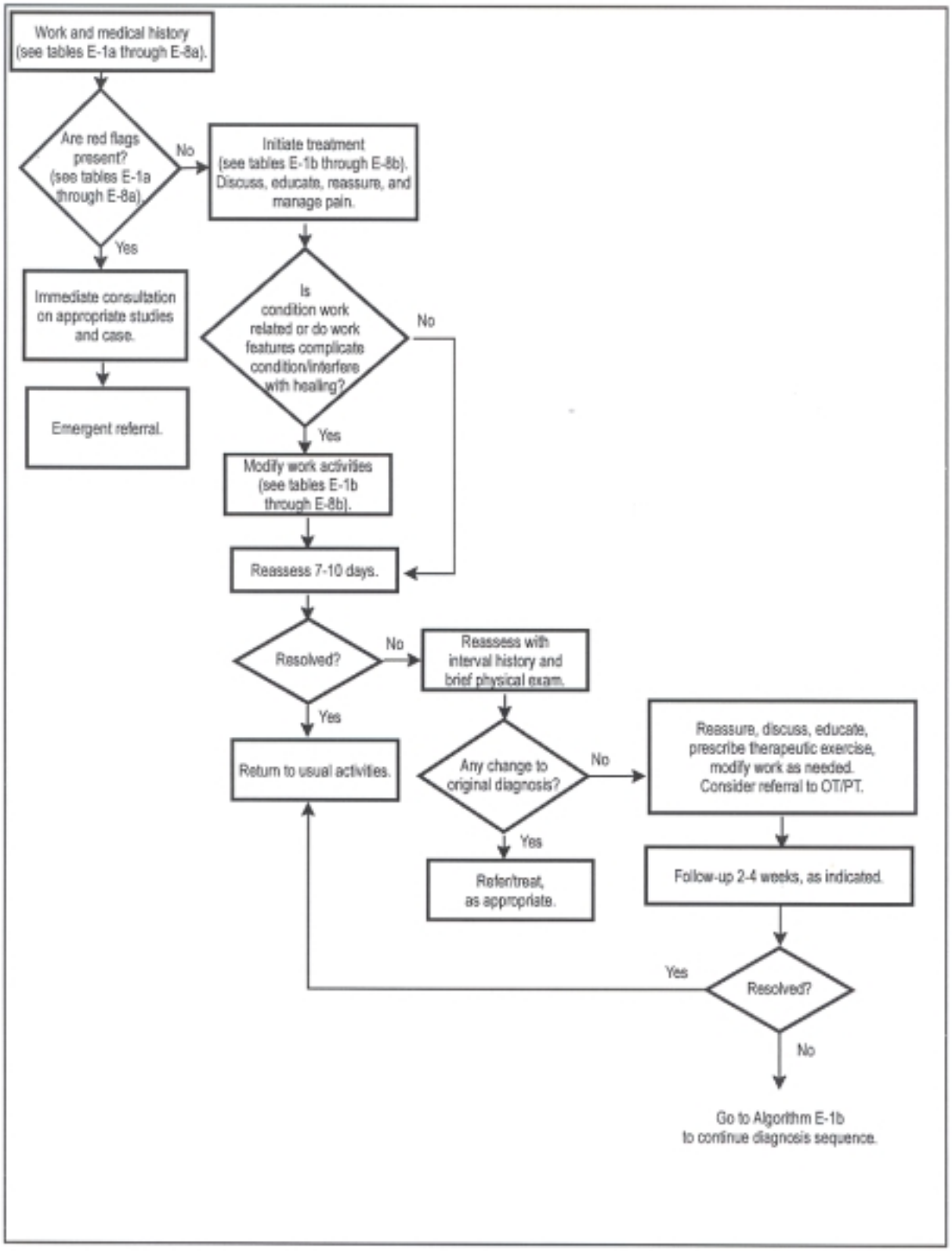
- Perform additional testing if the patient's history or physical examination indicates the need to do so. The additional tests may include, but may not be limited to, radiographic procedures, laboratory tests, and electrical studies.

- Notify and assist the ergonomics subcommittee in performing a complete job analysis if the medical assessment indicates the condition may be work-related.

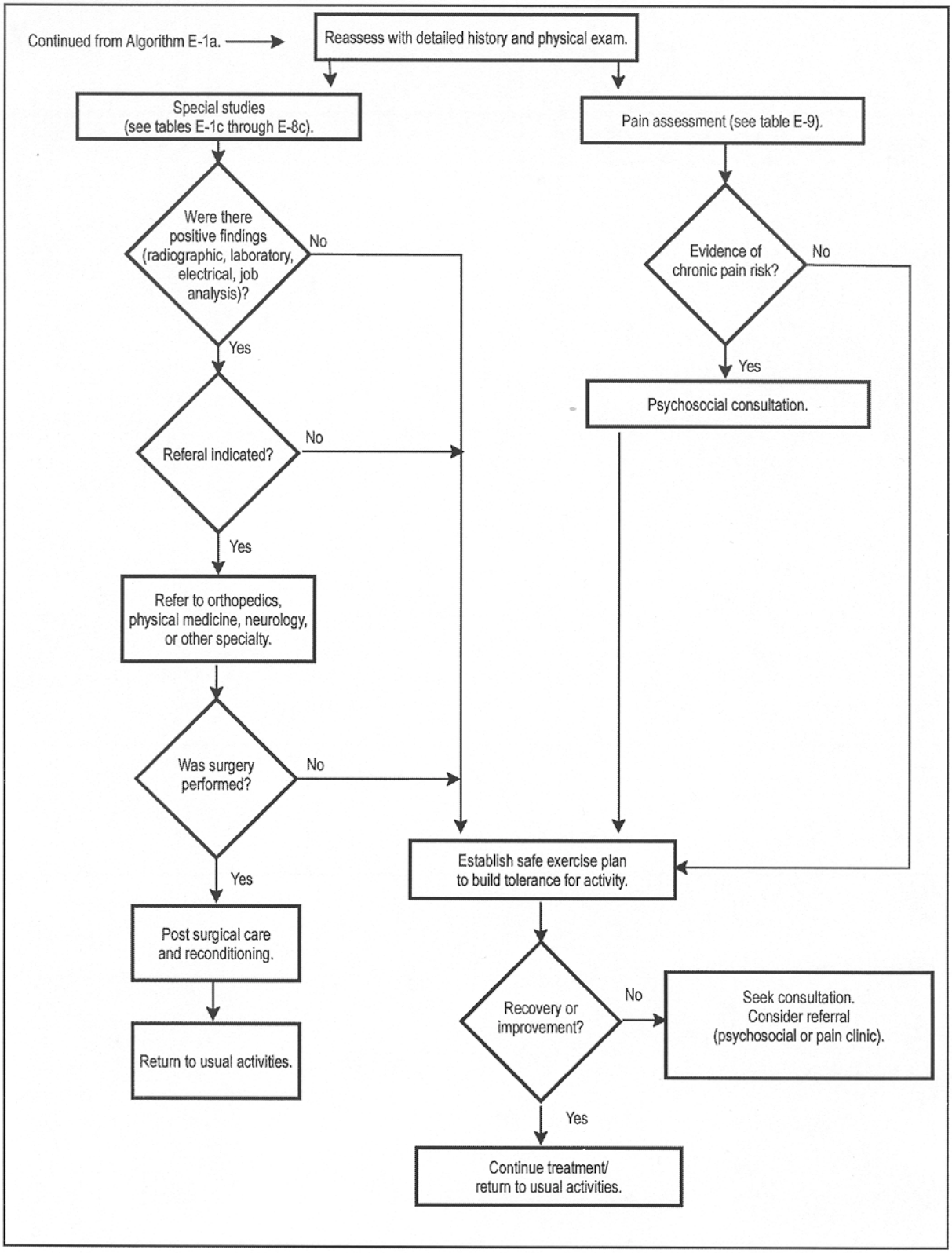
This appendix provides a probable diagnosis sequence and treatment guidelines for you to follow for some of the more common WMSDs. It is important to note that although there are a variety of treatments available for WMSDs, these therapies have not been validated by epidemiological studies. Therefore, try conservative therapy before invasive treatment.

Appendix Directory

Algorithm E-1a. Probable Diagnosis



Algorithm E-1b. Probable Diagnosis (continued)



Probable Diagnosis Survey

Refer to Algorithms E-1a and E-1b for the diagnosis sequence for common WMSDs.
Complete the following information on each patient displaying signs and symptoms of WMSDs.

Age: _____ **Hand Dominance:** ❑ Right ❑ Left **Occupation:** _____

Symptoms: _____
(e.g., location of injury, duration of each episode, nature/time of onset, provocative/relief symptoms)
Consider using the "Ergonomics Symptoms Survey" presented in appendix A of this booklet to obtain more specific information.

General Medical History: _____
(e.g., family, endocrine, diabetes, pregnancy, premenstrual, premenopausal, hypothyroidism)

Mechanism (if previous injury): _____

Previous Treatments: _____

Activity Limitations at Work Due to Condition:

_____

_____

Other Activity Limitations Due to Condition:
(e.g., hobbies or sports)

_____

_____

Table E-1a. Work and Medical History — CTS

Mechanism	Red Flags	Unique Symptoms	Unique Signs	Tests and Results	Differential Diagnoses
• Idiopathic repetition • Awkward postures • Awkward grasps or pinch • Vibration • Tenosynovitis • Hypothyroidism • Diabetes • Trauma • Pregnancy • Age is >40 years	• Rapidly progressive neurologic compromise (numbness, paresthesia, weakness, atrophy) • Vascular compromise (decreased pulses, decreased capillary filling, cool/pale hand)	• Numbness, tingling in thumb, index, middle, and radial half of ring fingers, especially at night or with activity • Hand pain radiating into the forearm • Decreased grip and pinch strength • Difficulty picking up small objects • Diminished sudomotor activity	• Decreased sensation in median nerve distribution > Plus Phalen's sign > Plus Tinel's sign *(variable)* • Decreased strength or atrophy of abductor pollicus brevis, opponens pollicus (advanced cases)	• NCV/EMG	• Systemic neuropathy (i.e., diabetes, alcoholism) • Cervical root impingement • Pronator syndrome • Anterior interosseous syndrome

Table E-1b. Treatment Considerations — CTS

Medication	Physical Methods	Education/Reassurance	Work Activity
• Non-narcotic analgesics	• Wrist splint (neutral position) at night and during daily rest periods *(Should not interfere with work activities and should not be worn while operating machinery.)* • Specific passive and active hand/wrist exercises to increase range of motion (ROM) and strengthening *(Consult with occupational or physical therapist (OT/PT).)* • Splint during activity (discuss)	• Causes, treatments, prognosis, self-care, activity modification • Wellness education and preventive exercises • Discuss extracurricular activities	• Avoid— > Prolonged periods in wrist flexion or extension > Activities involving tight or prolonged pinch or grip > Repetitive wrist motion > Exposure to vibration or cold • Limit frequency or typing force in keyboard use, mouse ergometry

Table E-1c. Special Studies — CTS

Radiographic	Laboratory	Electrical	Job Analysis
None	• If BMI >25, consider glucose • If high rate of suspicion, consider: > ESR (inflammatory arthritis) > Uric acid (gout) > TSH (hypothyroid)	• NCV must include median/ulnar sensory latency difference • If high index of suspicion, consider EMG to rule out other diagnoses	• Depending on severity of case and degree of work-relatedness, request that the ergonomics subcommittee or Public Health: > Assess the work area, tasks, tools, and equipment for workplace risk factors > Provide work area, task, tool, and equipment modification recommendations > Coordinate and consult with health care providers to develop a return-to-work plan

Table E-2a. Work and Medical History — Cervical Spine Disorders

Mechanism	Red Flags	Unique Symptoms	Unique Signs	Tests and Results	Differential Diagnoses
• Awkward postures • Repetitive overhead work • Trauma • Age is >40 years	• Neurological compromise (numbness, paresthesia, weakness, atrophy) • Upper motor neuron symptoms (ataxia, hyperreflexia) • History of cancer • Fevers	• Pain with range of motion • Pain or stiffness associated with area • Headache	• Tender to palpation • Decreased ROM • Palpable spasms	None	• Thoracic Outlet Syndrome • HNP • DDD • Meningitis • Metastatic Disease

Table E-2b. Treatment Considerations — Cervical Spine Disorders

Medication	Physical Methods	Education/Reassurance	Work Activity
• Non-narcotic analgesics • Muscle Relaxants (i.e., Flexeril, Roboxin, Valium)	• Self-treatment > Limit joint activity/immobilization > Application of cold or heat > Range of motion (ROM) exercises > Low stress conditioning and aerobic exercises to avoid debilitation • Modalities • Accupuncture • Consult with Physical Therapist (PT)	• Causes, treatment, prognosis, self-care, activity modification • Discuss extracurricular activities • Wellness education and preventive exercises	• Avoid static positioning and postures • Rotate tasks • Discuss job specifics to evaluate neck positioning

Table E-2c. Special Studies — Cervical Spine Disorders

Radiographic	Laboratory	Electrical	Job Analysis
• X-ray > AP/Lateral/Oblique cervical spine • Flexion/extension view of cervical spine (if necessary)	None	None	• Depending on severity of case and degree of work-relatedness, request that the ergonomics subcommittee or Public Health: > Assess the work area, tasks, tools, and equipment for workplace risk factors > Provide work area, task, tool, and equipment modification recommendations > Coordinate and consult with health care providers to develop a return-to-work plan

Table E-3a. Work and Medical History — Shoulder Rotator Cuff Dysfunction/Impingement					
Mechanism	**Red Flags**	**Unique Symptoms**	**Unique Signs**	**Tests and Results**	**Differential Diagnoses**
• Trauma • Repetition and/or forceful or awkward postures (overhead, sustained, flexion, and/or internal rotation) • Age is >40 years (rotator cuff) • Age is <30 years (instability)	• + Drop arm test • Neurovascular compromise (numbness, paresthesia, weakness, atrophy) • Coronary artery disease • Fevers • History of cancer	• Pain with overhead motion • Night pain when lying on affected shoulder	• Pain with passive elevation • Pain with elevation and internal rotation • Pain/weakness with resisted movements • Tenderness to palpation • Atrophy	None (initially)	• Brachial Plexus Injury • Cervical Root Impingement • Adhesive capsulitis • Bicipital Tendonitis • Rotator Cuff Tear • Instability • AC joint arthritis • Glenohumeral arthritis • Coronary Artery Disease

Table E-3b. Treatment Considerations — Shoulder Rotator Cuff Dysfunction/Impingement

Medication	Physical Methods	Education/Reassurance	Work Activity
• Non-narcotic analgesics • Subacromial steroid injections	• Self-treatment > Limit joint activity > Application of cold > Passive ROM exercises within a pain-free arc > Strengthening rotator cuff with arm at side or within pain-free motion • Modalities • Consult with PT/OT	• Causes, treatment, prognosis, self-care, activity modification • Sleeping postures • Stress importance of maintaining ROM • Discuss extracurricular activities • Wellness education and preventive exercises	• Avoid above-shoulder work • Activities should be in pain-free ROM

Table E-3c. Special Studies — Shoulder Rotator Cuff Dysfunction/Impingement

Radiographic	Laboratory	Electrical	Job Analysis
If initial conservative treatment fails, consider a shoulder series and/or an MRI, to include impingement views.	None (routinely)	None	• Depending on severity of case and degree of work-relatedness, request that the ergonomics subcommittee or Public Health: > Assess the work area, tasks, tools, and equipment for workplace risk factors > Provide work area, task, tool, and equipment modification recommendations > Coordinate and consult with health care providers to develop a return-to-work plan

Table E-4a. Work and Medical History — Knee-Prepatellar Bursitis (Kneeling)					
Mechanism	**Red Flags**	**Unique Symptoms**	**Unique Signs**	**Tests and Results**	**Differential Diagnoses**
• Single traumatic event • Repetitive trauma (i.e., kneeling)	• Fever • Elevated White Count/ESR • Severe swelling, erythema, warmth, tenderness • Severe pain with passive knee ROM	• Pain with direct pressure	• Mild-moderate swelling, erythema, warmth, tenderness • Crepitus • Symptoms reproduced with extreme flexion	• If suspect infection, conduct aspiration and fluid analysis	• Cellulitis • Septic Bursitis • Tendonitis (quad/patellar) • Septic arthritis (knee) • Internal Derangement • Anterior Knee Pain/PFPS

Table E-4b. Treatment Considerations — Knee-Prepatellar Bursitis (Kneeling)

Medication	Physical Methods	Education/Reassurance	Work Activity
• Non-narcotic analgesics	• Self-treatment > Rest > Limit joint activity > Application of cold > Compression wrap and/or knee pad > Temporary immobilization for severe cases • Aspiration	• Causes, treatment, prognosis, self-care, activity modification • Discuss extracurricular activities • Wellness education and preventive exercises	• Avoid kneeling and/or trauma

Table E-4c. Special Studies — Knee-Prepatellar Bursitis (Kneeling)

Radiographic	Laboratory	Electrical	Job Analysis
None	None	None	• Depending on severity of case and degree of work-relatedness, request that the ergonomics subcommittee or Public Health: > Assess the work area, tasks, tools, and equipment for workplace risk factors > Provide work area, task, tool, and equipment modification recommendations > Coordinate and consult with health care providers to develop a return-to-work plan

Table E-5a. Work and Medical History — Knee, Patellofemoral pain syndrome (anterior knee pain, chondromalacia patella, lateral patellar compression syndrome, excessive lateral pressure syndrome)

Mechanism	Red Flags	Unique Symptoms	Unique Signs	Tests and Results	Differential Diagnoses
• Single traumatic event • Repetitive trauma • Idiopathic • Malalignment	• Gross patellar instability • Reflex sympathetic dystrophy	• Pain behind patella • Symptoms aggravated by stair climbing, prolonged sitting,running or walking on inclines • Bilaterality	• Increased Q angle • VMO atrophy/weakness • Patellofemoral crepitus • Abnormal passive patellar tilt • Squatting reproduces symptoms	None	• Pre-patellar Bursitis • Patellar Tendonitis • Patellar instability • Internal derangement (i.e., plica, PCL instability)

Table E-5b. Treatment Considerations — Knee, Patellofemoral pain syndrome (anterior knee pain, chondromalacia patella, lateral patellar compression syndrome, excessive lateral pressure syndrome)

Medication	Physical Methods	Education/Reassurance	Work Activity
• Non-narcotic analgesics	• Self-treatment > Rest > Limit joint activity > Application of cold > ROM exercises > Isometrics • Consider bracing or orthotics • Modalities • Consult with PT	• Causes, treatment, prognosis, self-care, activity modification • Discuss extracurricular activities • Wellness education and preventive exercises	• Activity modification to avoid aggravating factors (i.e., prolonged knee flexion, stair climbing, ladder climbing/step stools, squatting) • Vocational rehabilitation

Table E-5c. Special Studies — Knee, Patellofemoral pain syndrome (anterior knee pain, chondromalacia patella, lateral patellar compression syndrome, excessive lateral pressure syndrome)

Radiographic	Laboratory	Electrical	Job Analysis
• Weight-bearing AP and lateral with patellofemoral view	None	None	• Depending on severity of case and degree of work-relatedness, request that the ergonomics subcommittee or Public Health: > Assess the work area, tasks, tools, and equipment for workplace risk factors > Provide work area, task, tool, and equipment modification recommendations > Coordinate and consult with health care providers to develop a return-to-work plan

Table E-6a. Work and Medical History — de Quervain's Disease					
Mechanism	**Red Flags**	**Unique Symptoms**	**Unique Signs**	**Tests and Results**	**Differential Diagnoses**
• Repetitive lifting • Awkward hand and wrist positions • Trauma • Pregnancy • Forceful Gripping • Vibration	• History of rheumatoid arthritis • Severe weakness • Reflex sympathetic dystrophy	• Pain in thumb and wrist	• Crepitus over motion of thumb/wrist • Edema over first dorsal compartment with thumb flexion/extension • Pain with passive ulnar deviation of the wrist with thumb in palmar flexion (Finkelstein's)	None	• Carpo-metacarpal Joint Arthrosis • Wrist Fracture • Intersection Syndrome • Radial neuritis

Table E-6b. Treatment Considerations — de Quervain's Disease

Medication	Physical Methods	Education/Reassurance	Work Activity
• Non-narcotic analgesics • Cortisteroids (injection)	• Self-treatment > Limit joint activity/immobilization > Application of cold > ROM exercises > Activity modification • Modalities • Consult with OT/PT	• Causes, treatment, prognosis, self-care, activity modification • Discuss extracurricular activities • Wellness education and preventive exercises	• Avoid— > Activities involving tight or prolonged pinch > Prolonged gripping in ulnar deviation > Thumb pinch patterns with wrist movement (i.e., scissors, pliers) • Active resisted radial deviation

Table E-6c. Special Studies — de Quervain's Disease

Radiographic	Laboratory	Electrical	Job Analysis
None	None	None	• Depending on severity of case and degree of work-relatedness, request that the ergonomics subcommittee or Public Health: > Assess the work area, tasks, tools, and equipment for workplace risk factors > Provide work area, task, tool, and equipment modification recommendations > Coordinate and consult with health care providers to develop a return-to-work plan

Table E-7a. Work and Medical History — Epicondylitis

Mechanism	Red Flags	Unique Symptoms	Unique Signs	Tests and Results	Differential Diagnoses
• Repetitive, forceful wrist extension (lateral), or flexion (medial), or gripping • Awkward hand, wrist, and forearm positions • Prolonged or sustained hand/wrist positions	None	• Lateral elbow pain or epicondyle tenderness • Increased pain with resisted wrist extension or forearm rotation • Medial elbow pain or epicondyle tenderness • Increased pain with resisted wrist flexion	None	None	• Avulsion fracture of lateral epicondyle • Ulnar Neuropathy • Radial tunnel syndrome • Posterior interosseous nerve compression syndrome • Cervical disease with radiculopathy

Table E-7b. Treatment Considerations — Epicondylitis

Medication	Physical Methods	Education/Reassurance	Work Activity
• Non-narcotic analgesics • Cortisteroids (injection)	• Self-treatment > Rest > Limit joint activity > Application of cold > ROM exercises/stretching > Tennis elbow strap • Modalities • Consult with OT/PT	• Causes, treatment, prognosis, self-care, activity modification • Discuss extracurricular activities • Wellness education and preventive exercises	• Avoid— > Forceful activities requiring twisting or gripping (e.g., turning screw driver, using hammer) > Repetitive or forceful elbow extension, especially with wrist motion > Lifting activities requiring a flexed elbow or extended wrist > Vibration (e.g., pneumatic tools or other sources) > Leaning on forearms or elbows

Table E-7c. Special Studies — Epicondylitis

Radiographic	Laboratory	Electrical	Job Analysis
None	None	None	• Depending on severity of case and degree of work-relatedness, request that the ergonomics subcommittee or Public Health: > Assess the work area, tasks, tools, and equipment for workplace risk factors > Provide work area, task, tool, and equipment modification recommendations > Coordinate and consult with health care providers to develop a return-to-work plan

Table E-8a. Work and Medical History — Trigger Finger or Trigger Thumb

Mechanism	Red Flags	Unique Symptoms	Unique Signs	Tests and Results	Differential Diagnoses
• Repetition • Awkward hand positions • Trauma • Forceful Gripping • Diabetes • Rheumatoid arthritis • Gout	• Digit fixed or locked in flexion or extension for >6 months	• Snapping or triggering with active flexion and extension of both IP joints of digit • Pronounced symptoms in the morning	• Snapping or triggering with active flexion and extension of both IP joints of digit • Nodule over the tendon • Tenderness over proximal tendon sheath at level of metacarpal head	None	• Metacarpal-Phalangeal joint locking • Flexor Digitorum Profundus avulsion/rupture • Failure of digit extension from chronic dislocation of metacarpal • Posterior interosseous nerve syndrome • Extensor tendon rupture

Table E-8b. Treatment Considerations — Trigger Finger or Trigger Thumb

Medication	Physical Methods	Education/Reassurance	Work Activity
• Non-narcotic analgesics • Cortisteroids (injection)	• Self-treatment > Limit joint activity > Application of cold > ROM exercises • Splinting if less than 4 weeks (acutely) • Consult with PT/OT	• Causes, treatment, prognosis, self-care, activity modification • Discuss extracurricular activities • Wellness education and preventive exercises	• Avoid aggravating activities, such as— > Using tools with sharp edged or hard handles which compress the palm > Using tools that require trigger activation, prolonged holding of a trigger, or a tight forceful grip

Table E-8c. Special Studies — Trigger Finger or Trigger Thumb

Radiographic	Laboratory	Electrical	Job Analysis
None	None	None	• Depending on severity of case and degree of work-relatedness, request that the ergonomics subcommittee or Public Health: > Assess the work area, tasks, tools, and equipment for workplace risk factors > Provide work area, task, tool, and equipment modification recommendations > Coordinate and consult with health care providers to develop a return-to-work plan

Table E-9. Pain Assessment

Potential (Open-Ended) Questions	Potential Response Indicators of Chronic Pain Concern
• How has the pain specifically limited your work activities? • When do you think you can return to work? • Are you under stress at work? Have things changed at home? • Has the pain caused you to curtail your social relationships/activities? • How much prescribed medication do you use? Are you using nonprescription medication, drugs, or alcohol for pain or other reasons? • Is the pain overwhelming? Are you having difficulty coping with it? • Are you depressed? Are you having difficulty sleeping? Do you have decreased appetite or energy?	• The patient no longer discusses return-to-work in a specific time frame. • The patient is unwilling to discuss his or her family situation or expresses comfort with role reversal at home. • The patient states that the illness or injury has caused all of his or her problems. • The patient directs excessive anger at the employer or co-workers, the physician, or an insurer and/or demonstrates an attitude of revenge or wanting to prove that he or she is sick. • The patient is less interested in the home therapy program or even in recovery of function.